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Aquifer Eyed as Reservoir

BY LEE ZION
Staff Writer

As Southern California gets squeezed both for water and a place to store it, the way to help solve both problems could literally be under our feet.

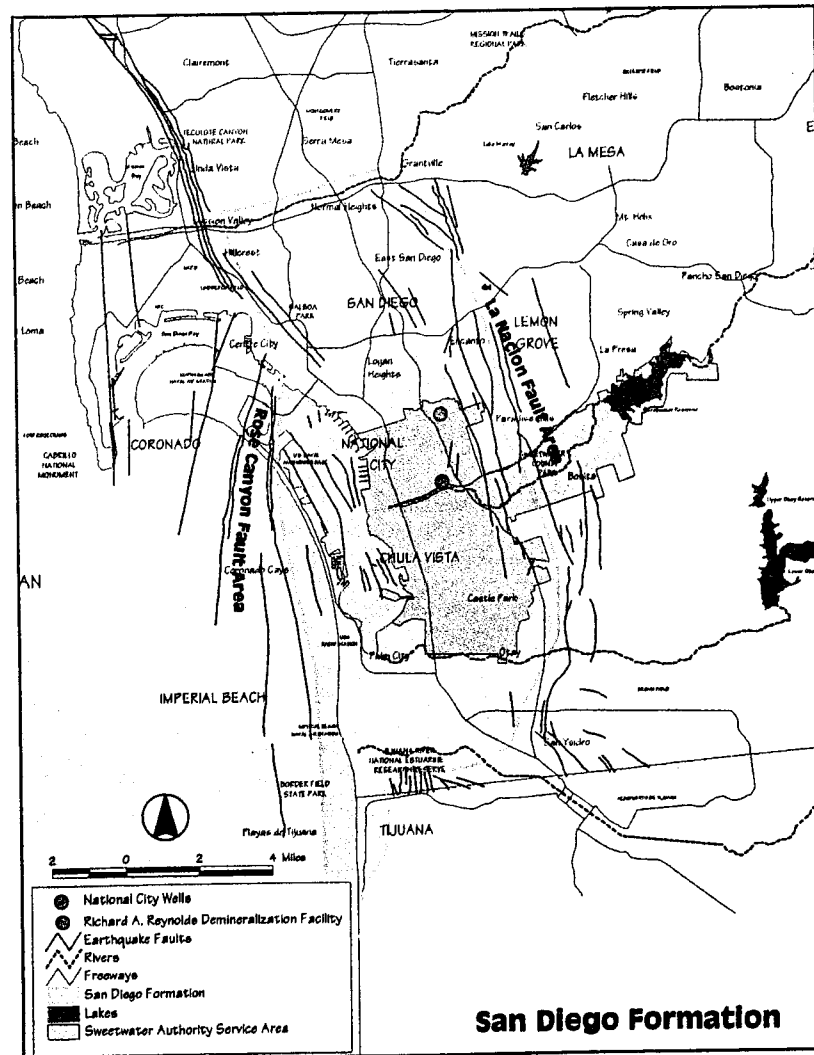
Rep. Bob Filner, D-San Diego, is floating a \$1.25 million proposal to fund Sweetwater Authority's study of a South Bay aquifer, or underground water formation. The aquifer could be useful both for storing water, and as an additional water supply, he said.

The aquifer, officially known as the San Diego Formation, sits underneath 125 square miles of land. It runs roughly from the Mexican border to Old Town, and from the Pacific Ocean to Interstate 805, said James Smyth, chief engineer for the Sweetwater Authority.

The aquifer is estimated to hold as

The San Diego Formation, a 125-square-mile aquifer seen outlined at right, is being proposed as a possible underground reservoir to help ensure local water supplies.

Sweetwater Authority



Reservoir: Sweetwater Studies Aquifer as Possible Underground Water Storage

much as 1 million acre-feet of water. By contrast, Sweetwater Reservoir holds 27,000 acre-feet, he said.

An acre-foot is roughly 325,000 gallons, or the amount of water two families of four consume in about a year.

Because the San Diego Formation is so large, it could be used for "groundwater storage." This would essentially turn the aquifer into an underground reservoir, Smyth said.

The water authority could import extra water in bumper years and store it in the ground for use in lean years. Or the aquifer could hold water overflowing the Sweetwater Reservoir in plentiful years, rather than being lost, he said.

Water Savings

"There's nothing worse when it rains, and Sweetwater Reservoir spills, and this water goes out to the bay," he said. "It sure would be nice if we could take that water and pump it into our groundwater aquifer."

Using an aquifer for storage has advantages over aboveground reservoirs, Smyth said.

"It's more difficult environmentally now to build surface storage. So then you go to below the ground," he said.

The study will not only confirm how much more water can be pumped into the aquifer, but also how much more can be pumped out. Sweetwater Authority has traditionally used

the aquifer as a water supply, Smyth said.

Since 1950, National City has had several wells drawing a total of 1,800 acre-feet a year from the San Diego Formation. In 1999, the Sweetwater Authority opened a second facility, which takes 3,000 additional acre-feet annually, he said.

Smyth hopes to find out how many more wells can be drilled without harming the aquifer.

Since the San Diego Formation could possibly be used both for water storage and for greater supply, this could help reduce local reliance on imported water, he said.

Obstacles To Overcome

However, there are several obstacles that must first be overcome. The study will answer several "unknowns" about the aquifer.

One such unknown is the quality of the water. Right now, the original 1950 wells pump out fresh water, but the newer facility, drawing on the same aquifer only two miles away, pumps out brackish water. That water must then run through a demineralization plant, Smyth said.

Another unknown is whether the San Diego Formation is being refilled naturally, from where, and how much. If too much water is taken out without being replenished, the land above it will collapse, possibly creating a massive sinkhole, he said.

Yet another unknown is how much fresh water can be taken from the ground before seawater rushes in to replace it. It may be necessary to pump water into the ground along the coast to create a "bubble" so seawater can't penetrate, Smyth said.

Meanwhile, Dave Spath, a drinking water expert with the California Department of Health Services, cited another potential problem. If the aquifer is used to store water imported from somewhere else, foreign contaminants could find their way into groundwater here.

For example, water in the Central Valley contains a high level of naturally occurring arsenic, a poisonous chemical with significant health effects even at low levels. That could find its way into local groundwater, he said.

Due to stringent water standards, the agency importing the water may have to post notices warning people of arsenic in their drinking water — even if the level was below the legal limit, Spath said.

"If that isn't going to raise the anxiety level of anybody reading that, then I don't know what will," he said. "They'll probably go to their local video store and pick up a copy of 'Arsenic and Old Lace' and really appreciate it."

4.4 Plan

Smyth noted if these problems are solved, using the aquifer will help the region reduce the amount of water it imports. Sweetwater

Authority would not be the only water agency to benefit, since the San Diego Formation also sits beneath Otay Mesa and the city of San Diego, he said.

If the region can reduce the amount of water it imports, this, in turn, will help California implement its 4.4 Plan. Under the plan, the state agreed to give up about 800,000 acre-feet of water to other states competing for the same supply.

The plan, signed in January 2001 by outgoing Interior Secretary Bruce Babbitt, orders California to reduce its use of Colorado River water from its current 5.2 million acre-feet. California gets a 15-year cushion to gradually reduce its use to its historic limit of 4.4 million acre-feet.

Filner said the 4.4 plan makes the San Diego Formation more important than ever.

"We're at the beginning of what could be intense water wars," he said. "(This) has tremendous potential to help not only San Diego, but of course the whole Southwest with knocking California down to 4.4."

Smyth agreed.

"(The aquifer) has gone unexplored for years and years and years. It was easier to import water than to go to the expense of looking at what you've got in your own back yard," he said. "Now it's more important than ever to try and find the good water that's there."